

1 CLAIMS

2 What is claimed is:

4       1. A method for safely handling unstable hydride gases comprising:  
5           an enclosure with one or more openings;  
6           a partitioning means to divide the said enclosure into smaller volumes;  
7           one or more connecting passageways between each smaller volume and an  
8 opening to the enclosure;

9           a means to store heat within the said enclosure;  
10          a heat transfer means from every smaller volume to the means to store heat;

11 and

12          sizing the partitions, the heat sinks and the heat transfer means so as to prevent  
13 the temperature of the gas or gases in any of the smaller spaces from reaching the  
14 minimum temperature needed to cause ignition or decomposition of the gas or gases in  
15 an adjoining space.

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17       2. A method as claimed in claim 1 wherein said partitioning means  
18 comprises part or all of the means to store heat.

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20       3. A method as claimed in claim 1 wherein said partitioning means  
21 comprises part or all of the heat transfer means.

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23       4. A method as claimed in claim 1 wherein said partitioning means can be  
24 inserted through an opening that has a smaller diameter than the enclosure

1       5. A method as claimed in claim 1 wherein said means to store heat can  
2 comprise raising the temperature of a heat storage medium, melting or vaporizing a  
3 heat storage medium is changed, initiating a heat absorbing chemical reaction of a  
4 heat storage material or any combination thereof.

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6       7. A method as claimed in claim 1 wherein said minimum temperature is the  
7 thermal decomposition temperature of hydride gases which can release heat by  
8 decomposing without oxidation which include acetylene, propadiene, methylacetylene,  
9 butadiene, ethylene, hydrazine, silane, disilane, trisilane, germane, digermane,  
10 trigermane, arsine, stibine, bismuthine, plumbane, hydrogen selenide and hydrogen  
11 telluride.

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13       8. A method as claimed in claim 1 wherein said partitioning means  
14 comprises commercially available column packing, cut tubing pieces,  
15 metal turnings, hollow or solid balls, mesh, fabric, granular material, open  
16 cell foams or sintered metal.

17       9. A method as claimed in claim 1 where the temperature required to prevent  
18 ignition is between 25°C and 600°C

19       10. A method as claimed in claim 1 where the size of the sub volume created  
20 by the partitioning means is between  $1 \times 10^{-18}$  and  $1 \times 10^{-3}$  cubic meters

21       11. A method and apparatus for suppressing explosions as claimed in  
22 claim 1 wherein said partitioning means is coated with a further material.

23       12. A method as claimed in claim 1 wherein said partitioning means is  
24 coated with a material which decomposes at a temperature between  
25 room temperature and the said minimum temperature and provides a

1 chemical which can be detected to indicate that the temperature of the  
2 enclosure has been elevated.

- 3 13. A method as claimed in claim1 where a some or all of the partitioning  
4 means consists of one or materials which absorb heat when they react

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